

### **REMARKS**

This responds to the Office Action mailed on June 17, 2005, and the references cited therewith.

Claims 1, 6, 10 and 20 are amended. Claims 22-24 have been added. Claims 1-24 are now pending in this application.

#### **§102 Rejection of the Claims**

Claims 1, 3-7, 10, 15 and 17-20 were rejected under 35 U.S.C. § 102(e) as being anticipated by Liu (U.S. 6,788,727 B2). Applicant reserves the right to swear behind the reference at a later date. The claims, some of which were amended clearly distinguish the reference, as Liu does not show the use of lateral trenches.

Each of the independent claims has elements that refer to lateral trenches on sides of the cavity. The lateral trenches, as shown in FIG. 3 at 310 and 315 are formed in the same direction as light traveling through the waveguide. In one embodiment, the lateral trenches confine injected carriers into the cavity region in order to reduce power consumption and increase operating speed of light modulation.

The Office Action refers to Liu at Fig. 7, col. 9, lines 41-52 as describing a lateral trench in the micro-cavity on both sides of the modulator. This characterization is respectfully traversed. Fig. 7 refers to tunable Bragg grating 701. It does not show a lateral trench for the cavity as that term has been used and defined, and as would be interpreted by one of skill in the art. At best, the trenched silicon structures of Liu at transverse to the cavity and direction of light. That is exactly how a Bragg grating is formed, and is very different from the structure claimed in the rejected claims. Reconsideration and withdrawal of the rejection is respectfully requested, as a prima facie case of anticipation cannot be established.

It should be noted that claim 19 is written in a means plus function format. The element: "means for confining carriers in the cavity;" describes a function that is clearly performed by the structure of lateral trenches, and thus the claim is believed to distinguish from Liu for the same reasons as discussed above.

Claims 1-21 were rejected under 35 U.S.C. § 102(b) as being anticipated by Onischenko (WO 02/079863 A2). This rejection is respectfully traversed. The currently pending claims are believed to clearly distinguish the reference.

The Office Action indicates that Onischenko discloses a lateral trench in the micro-cavity on both sides of the modulator at page 5, line 19 to page 7, line 6. This assertion is respectfully traversed. Onischenko indicates that "Deep trenches 5 are etched perpendicularly to the waveguide..." Page 5, lines 22-23. Thus, the trenches in Onischenko are transverse or perpendicular to the lateral trenches described and claimed in the present application. As at least one element of each claim is not shown in Onischenko, a proper prima facie case of anticipation has not been established, the rejection should be withdrawn.

§103 Rejection of the Claims

Claims 2, 9, 11-14 and 21 were rejected under 35 U.S.C. § 103(a) as being unpatentable over Liu (U.S. 6,788,727 B2) in view of Uomi et al. (U.S. 5,132,981). Since all of the claims reference the use of lateral trenches, and neither Liu nor Uomi et al. show such lateral trenches, the combination of the references does not teach or suggest the use of lateral trenches, the rejection should be withdrawn.

New claims 22-24 have been added, and depend from independent claims that are believed allowable. The new claims describe the passivation of the cavity region.

**CONCLUSION**

Applicant respectfully submits that the claims are in condition for allowance, and notification to that effect is earnestly requested. The Examiner is invited to telephone Applicant's attorney at (612) 373-6972 to facilitate prosecution of this application.

If necessary, please charge any additional fees or credit overpayment to Deposit Account No. 19-0743.


Respectfully submitted,

CARLOS ANGULO BARRIOS ET AL.

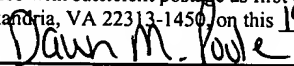
By their Representatives,

SCHWEGMAN, LUNDBERG, WOESSNER & KLUTH, P.A.  
P.O. Box 2938  
Minneapolis, MN 55402  
(612) 373-6972

Date 9-19-2005

By   
Bradley A. Forrest  
Reg. No. 30,837

**CERTIFICATE UNDER 37 CFR 1.8:** The undersigned hereby certifies that this correspondence is being deposited with the United States Postal Service with sufficient postage as first class mail, in an envelope addressed to: Mail Stop Amendment, Commissioner of Patents, P.O. Box 1450, Alexandria, VA 22313-1450, on this 19th day of September, 2005.



Name



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